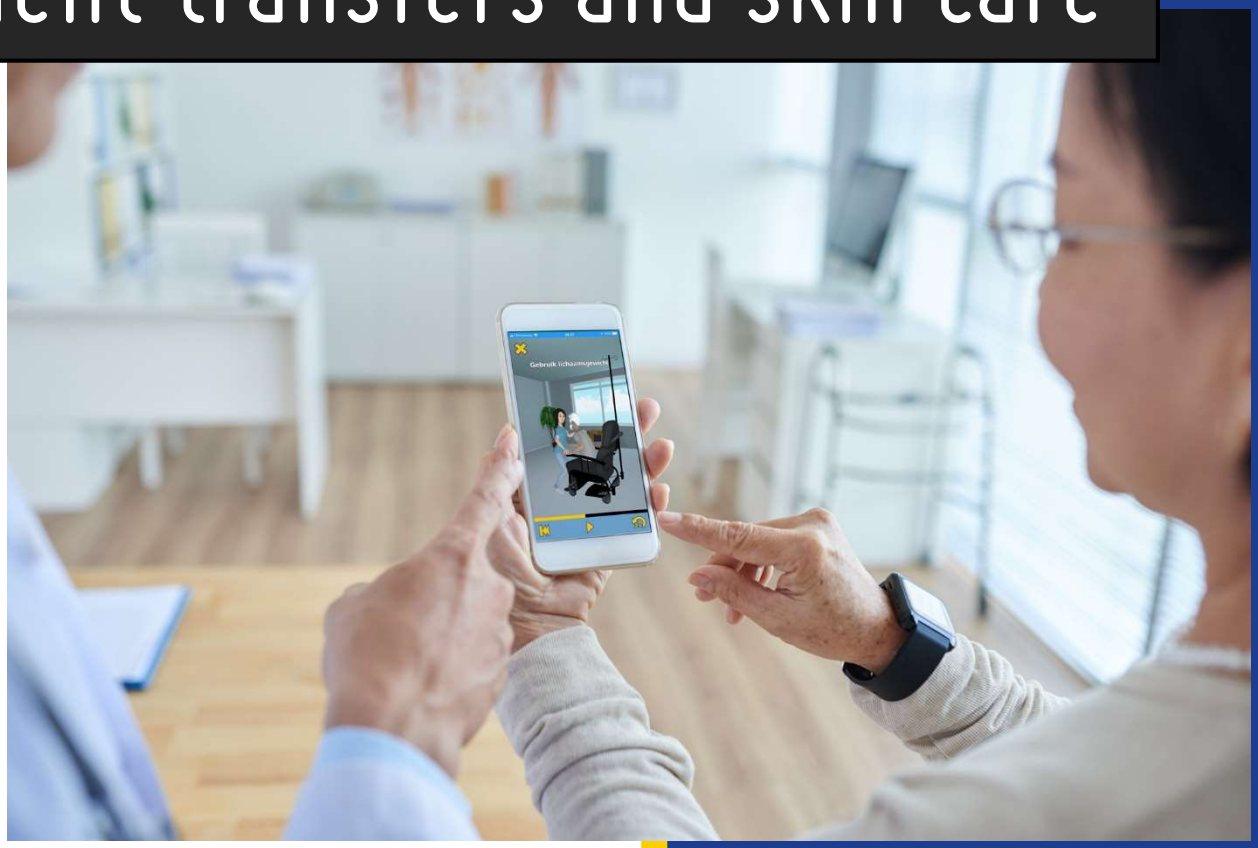
English version

Chapter
Patient transfers and skin care



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English version

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Ergonomically performing a transfer to prevent physical overload of the caregiver and at the same time prevent skin problems for the client (due to pressure, friction and shear forces during the transfer) is not always easy in practice.

Regular exercise, good nutrition, sufficient fluids and a good basic condition of the client are important in preventing pressure ulcers. Frequent repositioning also helps. By repositioning, the pressure on the body is always shifted to somewhere else, which reduces the risk of damage. But repositioning can be physically demanding for the caregiver. On top of this, incorrectly performing transfer techniques can even lead to skin damage.

Repositioning

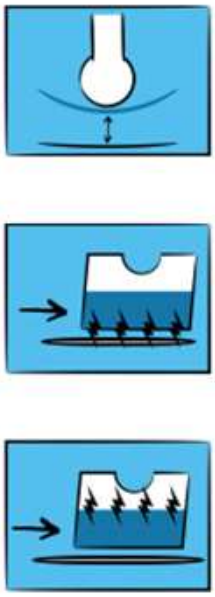
Repositioning, individually determined for clients with an increased risk of pressure ulcers, is part of good care (Latimer et al, 2015; Serraes and Beeckman, 2016). However, research also shows that repositioning, an action that is intended to reduce the risk of pressure ulcers, can lead to a greater risk of pressure ulcers (Gefen et al., 2013; Oomens et al, 2014). We therefore run the risk of increasing the possibility of tissue damage for the client, instead of reducing it. At the same time, healthcare providers are more likely to develop musculoskeletal complaints.

Many guidelines to prevent pressure ulcers indicate that you should not push or pull a client, but should lift. And that is exactly the opposite of what we would want from the point of view of caregivers' back pain prevention. Repositioning and other movements within the boundaries of the bed such as rolling over, sideways and up in the bed are in the Top 5 of the most physically demanding actions. The Practical Guidelines for Physical Load (CEN ISO TR 12296) indicate that you need an electrically height-adjustable bed and a slide sheet or similar device for this.

Pressure, friction and-shear forces

When it comes to pressure ulcers, many factors play a role but, in any case, the following three aspects: pressure, friction and shear forces. By 'pressure' we mean the vertical pressure that is exerted by the client on the bottom area of contact (the mattress, the chair, the shower stretcher, etc.). This pressure causes tissue, but also blood vessels, to compress and close.

Friction occurs between the skin and the layer underneath the skin, for example when the client is sliding down in bed. Think of striking a match. And shear forces arise when tissue layers come under pressure and stretch relative to each other.



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Especially the shear forces can lead to enormous damage in the tissues during transfers. For example, if a sideways transfer is done with a draw sheet, the sheet is actually pulling the client by his skin. First the sheet pulls by the skin and, when it is at maximum stretch, the tissues under the skin follow and finally the bone. The small blood vessels are put on stretch and therefore less blood can flow through. In addition, these now narrowed vessels are put under extra pressure ('reperfusion'), so that even less nutrition can reach the tissue.

But what can then be done to minimize the risk of pressure ulcers from performing transfers? After all, the same transfers are also necessary to prevent pressure ulcers. Here are nine tips.

Tip 1: Use double layer sliding sheets

To prevent physical overload of the caregiver when performing transfers within the bed, according to the Practical Guidelines for Physical Load in clients with reduced mobility (MK5, classes C, D or E), it is necessary to use a sliding sheet or something similar. Roughly speaking, there are three types of sliding sheets: the single-layer, the double-layer (two separate sheets) and the round-sewn double-layer 'tunnels'. Measurements (Knibbe, 2017) show pronounced differences between the risks associated with the use of single- and double-layer sliding sheets. With a double layer sliding sheet (two separate sheets or tunnel) there is less chance of friction and shear forces developing in or on the skin of the client. So there is a reduced chance of pressure ulcers. The realignment of tissue layers (so tissue returns to its original anatomical position) is also easier after the transfer when using double layer slide sheets.

Tip 2: Move steady

Research (Knibbe, 2017) shows that the force required by the caregiver to move the client with a double-layer sliding sheet is lower than with a single-layer sliding sheet. This reduces the risk of physical overload for the care provider, and thus the risk of musculoskeletal complaints. Belgian research by Maertens (2011) comes to almost the same conclusions. The difference in required strength is around 40%.

It also appears that small differences in technique can lead to large differences in pressure distribution and shear forces in the case of transfers with sliding sheets. This mainly concerns the explosiveness with which the care provider carries out the transfer. The highest pressure and shear forces are measured when the action is performed quickly and forcefully ('explosively'). If the action is done calmly and gradually, we see much less pressure and shear forces, and therefore less chance of skin damage. For educational purposes it can be practical to work with the 1,2, 3 rule: slowly build up the force in three steps.

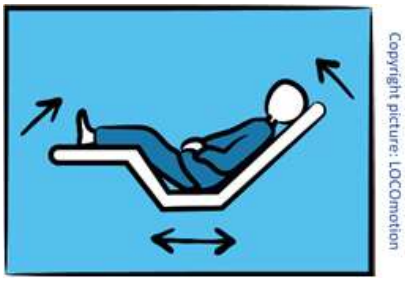
Tip 3: Take the mattress into account

Research by Maertens (2011) also shows that working with sliding sheets is more difficult if the mattress is softer. After all, the client sinks somewhat into the mattress and is difficult to pull or push out of it. However, there are also mattresses with pumpless air systems that on the one hand offer good pressure distribution to the client and on the other hand are hard enough for performing transfers with sliding sheets. Another solution, which is rarely used in practice for transfers, is the 'care mode' that some beds offer. This makes the mattress a bit stiffer so that the client does not lie in a kind of dimple.

Tip 4: Get in lane

Getting in lane also limits the risks of pressure ulcers. By this we mean that the legs or feet of the client are already placed in the direction of the movement.
The transfer is then divided into smaller parts. This is not only physically less stressful for the caregiver, it also reduces the friction, twisting and pressure forces in the client's tissue. An example of getting in lane is moving to the center of the bed in small steps (MK5 mobility class A, B or C). This prevents a combination of friction and sliding that otherwise often arises during the rotational movement of the buttocks on the mattress. This should be carefully assessed in case of hip issues.

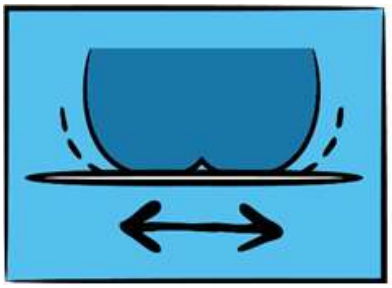
Tip 5: Move



It may sound superfluous, but it cannot be said often enough in the context of pressure ulcer prevention: **ensure that the patient moves as much as possible**. These can be small movements, as long as the local pressure is relieved for a while. In this way, the risk of residual tension and thus tissue damage is also limited. This is of course not only about the position in bed, the position in the chair or wheelchair can also give rise to pressure ulcers.

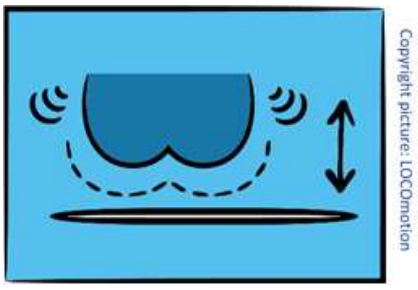
Preferably, the clients naturally move by themselves. But if there is no other option, passive exercise is also a possibility. For example, by making optimal use of the adjustability of the bed. This is possible with traditional hospital beds, but also, for example, with an automatic repositioning bed system (Knibbe et al, 2018).

Tip 6: Increase contact area



The larger the contact area, the better the pressure is distributed. This reduces the risk of pressure ulcers, particularly in the well-known risk areas (back of the head, tailbone, hips, shoulders, heels). If the client is in bed, this can be done by making maximum use of the support options of the bed. Think of Fowler and Trendelenburg in all kinds of variations and combinations. With chairs and wheelchairs, a good occupational therapeutic fit is especially important to maximise seating comfort and thus minimize pressure on the skin and the underlying layers. For very passive clients, such as MK5 mobility class E, there are semi-sitting and lying ortheses that are specifically intended for pressure distribution.

Tip 7: Let residual tension flow away

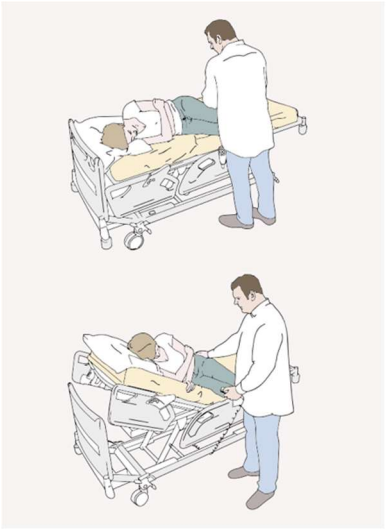


When completing the transfer, it is important to check that the client no longer has any tension in the skin and underlying tissue. Sometimes the residual tension can be recognized by folds in the skin, for example at the elbow or hips. However often it is not clearly visible and it is better to be safe than sorry. By, for example, having the client lift the arm or leg briefly at the end of the transfer, tension quickly disappears. In addition if the seated client wiggles back and forth, so the buttocks are released from the seat, this can have the same effect. And, of course, make sure that the surface on which the client is sitting or lying is smooth, without creases or wrinkles.

Tip 8: Beware of friction

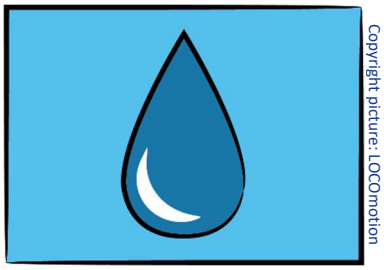
There are several solutions to prevent wringing of the skin during transfers. When the client is transferred from lying to sitting on the edge of the bed using the head end of the bed, the contact area remains as large as possible and there is less friction: after all, the client does not turn over the tailbone.

Moreover, during transfers with a hoist, friction can be minimal as there is a large and even contact area because of the sling. Special beds, such as the mentioned automatic repositioning bed system and lifting sheets that can be linked to a ceiling lift system, can also be excellent solutions. These allows the client's reclining position to be varied minutely and at the same time to be supported evenly (Knibbe et al., 2014).



Tip 9. Prevent moisture

During transfers, the moisture level of the client's skin is important for the risk of tissue damage. Moisture, for example during fever or incontinence, increases the friction between the skin and the underlying tissues (Fletcher et al, 2016; Folan et al, 2015; Francis et al, 2017). With dry skin, the friction coefficient is lower, shear forces are lower and the skin and underlying tissue are less vulnerable.



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